215.72

Blood Tests

Overview

Introduction

The WIC Program uses hemoglobin to screen individuals for iron deficiency anemia. Hemoglobin and hematocrit levels from another health care provider may be used.

Definitions

Hemoglobin is the iron-containing component of red blood cells. It is measured using a HemoCue Hemoglobin Photometer (HemoCue) or Pronto non-invasive Pulse Co-Oximeter.

Policy reference

MPSF-1: WC-00-08-P: Final Rule: WIC Bloodwork Requirements

Related policy

See Policy 245.60 for referral criteria for low or high blood values.

In this policy

This policy covers the following topics.

Testing Policies

Source of data
Blood tests may be performed in the WIC clinic, or referral data from another health care provider may be used.

Who may perform tests
In WIC clinics, blood tests may be performed by health professionals that include but are not limited to:

- Registered nurses,
- Licensed practical nurses,
- Licensed dietitians,
- Phlebotomists, and
- Medical assistants.

Universal Precautions training is required for all WIC staff performing blood screenings. See policy 360.60 for more information.

Use of previously collected data
Data from tests performed before the certification appointment may be used to determine eligibility if the data:

- Reflects the applicant's categorical status,
- Conforms to the anemia screening schedule (see pages 4-6), and
- Identifies the date it was performed.

Example
Data used to certify a pregnant woman must have been collected during her pregnancy. Data collected during pregnancy may not be used to certify a postpartum or breastfeeding woman.

Exception
Data collected when an infant is 9-11 months old may be used to certify the child at 12 months.

Summary of testing options
The table below provides a summary of options for the blood tests as part of the WIC certification process.

If the applicant…	THEN…
has a risk and brings referral data	use the referral data.
has a risk and had/has an appointment with another provider	follow-up in 90 days to get the data.
is up-to-date with screening schedule, and has a risk	skip the blood test.
is up-to-date with screening schedule, and does not have a risk	do the blood test.
is not up-to-date with the screening schedule, · has no scheduled appointment with another provider, and · does not have a risk	do the blood test.

Using Referral Data

Policy
If an applicant has one qualifying nutrition risk factor AND has a health care appointment soon, WIC personnel may choose not to perform bloodwork and follow-up to obtain the results from the referral source within 90 days. Document this by selecting "Appointment with provider" for the data system field, "No test performed reason."

Local agencies must follow-up
Options for follow-up include the following:

- Write an alert in the data system to follow-up at the next appointment,
- Complete a Request for Information form and send it directly to the health care provider OR give it to the parent/caretaker to take to the appointment,
- Provide the parent/caretaker with the appropriate Nutrition Health History Card, request that their provider record the results on the card, and bring the card back to the WIC clinic the next time they pick up benefits, or
- Make a referral to the Title V Program for care coordination services.

Note: If a local agency demonstrates poor performance in obtaining referral data, the State Agency may require the agency to perform bloodwork and limit the use of referral data only to previously collected data.

Failure to provide referral data
It is not the intent of policy to sanction participants who fail to provide referral data. These participants are eligible for WIC on the basis of another qualifying risk. However, it is not in the best interest of participants to repeatedly certify them in the absence of bloodwork data. Lack of bloodwork could be an indication of problems with access to care that WIC staff should investigate. Therefore, when a participant fails to provide referral bloodwork data for a certification period, bloodwork must be available from a referral source or drawn at the WIC clinic for the next certification period.

Recording referral data
It is critical to record the results and the actual date bloodwork was performed in the participant's electronic record. This helps monitor compliance with the anemia screening schedule and to ensure accurate risk assessment.

Data field: Deferred results
Marking the checkbox allows the bloodwork record to be edited in the future with the results. This is intended for bloodwork drawn at the appointment but the results were not available. This data system feature will be used most often to document blood lead results drawn by Child Health program staff.

Screening Schedule for Infants and Children

Introduction
The bloodwork requirements for infants and children are intended to:

- Accommodate the periodicity schedules for anemia screening recommended by the Centers for Disease Control and Prevention and the American Academy of Pediatrics, and
- Reduce duplication in testing.

Screening schedule

The table below describes the anemia screening schedule for infants and children.

Age	Schedule	Comments
Birth-12 months	Once between 9-12 months	• Bloodwork data should be obtained closer to 9 months of age for infants at risk for anemia (infants lacking a regular source of dietary or supplemental iron). • Bloodwork data can be done closer to the first birthday for infants who are not at high risk for anemia Note: A blood test between 6-9 months can be used to meet this requirement. This is to be the exception, not usual practice.
12-24 months	Once between 12-24 months	A blood test is recommended 6 months after the infant test (at around 15-18 months of age). Note: One test at or before 12 months cannot be used to meet the requirement for the 9-12 month infant screening and the 12-24 month child screening.
24-60 months	Once between 24-36 months Once between 36-48 months Once between 48-60 months Note: There may be more than 12 months between tests yet the child is still up-to-date with the screening schedule.	Follow-up tests at 6 month intervals are needed for children who: • Had a low hemoglobin or hematocrit reading at the previous screening. A follow-up is not required for children with Thalassemia if they are followed closely by a physician. • Are currently at risk for anemia due to recent illness or diagnosis of a medical condition.

Screening Schedule for Infants and Children, Continued

Examples for children

Example

A child with a normal hemoglobin at 18 months of age comes in for certification at 24 months. The child is not at risk for anemia based on medical history. A hemoglobin will need to be done sometime between 24-30 months.

Exception

A child with a normal hemoglobin at 18 months of age comes in for certification at 24 months. The child is at risk for anemia based on medical history. A hemoglobin level must be obtained at the clinic or from referral data. To meet the 6-month interval, it may be in the best interest of the child to perform the blood test at the WIC clinic.

Tracking blood tests

Bloodwork results are displayed in the data system to help WIC personnel track whether the screening schedule has been met. For more information about this feature, check the Help menu in the data system.

Screening Schedule for Women

Introduction

The bloodwork requirements for certification of women are intended to:

• Accommodate the periodicity schedule for anemia screening recommended by the Centers for Disease Control and Prevention, and

• Reduce duplication in testing.

Screening schedule

The table below describes the screening schedule for women based on their category of participation.

Category	Schedule
Pregnancy	During their current pregnancy Note: Bloodwork results should be analyzed based on the trimester the data was obtained.
Breastfeeding women	After the termination of their pregnancy For breastfeeding women who are 6-12 months postpartum, a blood test is required if: • A blood test was not obtained after the termination of the pregnancy, OR • The test value was low.
Not Breastfeeding	After the termination of their pregnancy

Medical and Religious Exemptions to Blood Tests

Policy
Invasive blood tests are not performed by WIC when the applicant:
• Is less than 6 months old,
• Has religious beliefs that prohibit having blood drawn, or
• Will be harmed by the finger stick because of a medical condition such as:
• Hemophilia
• Osteogenesis imperfecta (fragile bones), or
• Serious skin disease.

These applicants must have other qualifying risk factors in order to be found eligible for WIC services.

Alternatives for medical exemptions
When a medical condition precludes testing at the WIC clinic, document this exception by selecting "Medical condition" for the data system field, "No test performed reason."
Alternatives for obtaining bloodwork data include the following:
• Obtain referral data from the applicant's health care provider, or
• Refer the applicant to a laboratory with personnel trained to collect blood from persons with medical conditions.

Note: Referral to a laboratory is an allowable WIC expense, but is not recommended except in extreme circumstances due to cost. The applicant cannot be required to pay for the testing.

Statement required
If a blood test is not performed because of the applicant's religious beliefs, document the applicant's refusal by selecting "Religious statement" for the data system field, "No test performed reason."

Doing Follow-up Blood Tests Mid-Certification at WIC

Policy
WIC programs can perform one follow-up blood test for a participant between certification appointments. For the purposes of this policy, a follow-up blood test is an additional test; it is not the blood test conducted for eligibility purposes. However, WIC personnel are encouraged to explore other locally available sources for ongoing health care and follow-up assessments for WIC participants with anemia.

Local sources of health care
Community sources for ongoing health care include:
• Private providers
• Certified Child Health Programs, and
• Certified Maternal Health Programs.

WIC's role
WIC's role in follow-up care includes:
• Referring participants to a health care provider,
• Obtaining and reviewing the follow-up lab values, and
• Coordinating nutrition education with the health care provider's recommendations.

Blood-Drawing Techniques

Puncture sites

The table below lists recommended puncture sites:

Participant category	Recommended site
Infants	The lateral and medial portion of the plantar surface of the heel Note: Avoid the central area; the heel bone is close to the surface.
Children & Women	The ring or middle finger

Sites NOT recommended

The table below lists sites that should NOT be used for puncture.

Participant Category	Sites NOT Recommended	Rationale
Infants	•Toes •Fingers	Both areas are small; puncture may cause injury
Children & Women	•Thumb	• Puncture may cause injury to radial artery and cause excessive bleeding
	•Fifth Finger (pinkie)	• Small surface area; puncture may cause injury
	•Index Finger	• Surface may have either callusing that prevents puncture from producing enough blood or a thinner layer of skin with nerve endings closer to the surface resulting in excessive pain

Tips to collect enough blood

Collect blood from the applicant's ring or middle finger. The following tips may help you collect a sufficient blood sample:

• Apply a warm cloth or compress to the applicant's finger before cleaning it.
• Ask the applicant to hold hand down and make a fist several times.
• Poke the fleshy part of the finger; the side is usually best.

Holding applicant's hand

Two methods for holding the applicant's hand comfortably and safely are:
•Hold the applicant's entire hand with a firm palm-to-palm grip, or
•Hold the applicant's selected finger with your thumb and forefinger.

Reference National Committee for Clinical Laboratory Standards

Procedure for Measuring Hemoglobin with Hemocue

Step	Action	Note
1	Assemble equipment: Remove a cuvette from the vial, lancet, gauze, alcohol swab, bandage	Immediately replace cap tightly on vial.
2	Put on disposable gloves.	Wear new gloves for each client. See Policy 360.65
3	Clean applicant's finger by rubbing with 70% isopropanol.	Allow to dry.
4	Hold the applicant's hand, and use a sterile lancet to puncture skin quickly and firmly, deep enough for blood to flow freely.	Be prepared for participant's sudden instinctive withdrawal.
5	Wipe away the first three good-sized drops of blood with dry gauze. Do not "milk" finger.	This stimulates blood flow and clears tissue fluid from the site.
6	Introduce the cuvette tip into the middle of the fourth drop of blood. Fill the entire yellow area.	The cuvette fills in a continuous process. Never top off a cuvette after filling
7	Cover skin prick with a dry gauze and apply pressure.	----------
8	Wipe off excess blood from both sides and back of the cuvette using the "butterknife" wipe technique.	Avoid touching the opened end (curved edge) of the cuvette to prevent drawing blood back out of the cuvette.
9	Are there air bubbles in the cuvette? If yes, repeat steps 6-7 with new cuvette. If no, go to step 10.	Air bubbles in the center will produce a false low reading. Small air bubbles around the edge do not affect the result.
10	Insert filled cuvette in the Hemocue holder and push in completely. .	Insert cuvette within 10 minutes of filling to ensure correct reading. Results appear in ~ 45 seconds.
11	Discard the lancet and cuvette in a puncture-resistant container.	If a lancet with a disposable tip/platform is used, discard the tip/platform.
12	Check skin prick for bleeding. Apply a bandage if needed.	Due to the risk of choking, it is not recommended to apply a bandage to a child less than 2 years old.
13	Remove and discard gloves.	Wash hands or use waterless hand cleanser.
14	Record results in the data system and explain the results.	----------

Procedure for Measuring Hemoglobin with HemoCue, Continued

Smoking affects levels
Smoking increases the hemoglobin or hematocrit level. However, record the hemoglobin or hematocrit level as obtained on the data system forms. Do not adjust the level to account for smoking.

Example
A woman who smokes one to two packs of cigarettes per day may have a hematocrit increase of 1.5 percent. Record her actual test results.

Reference Measuring procedure adapted from HemoCue Hemoglobin Photometer Procedure, May 1990, DeCentech, Inc. For more information, refer to the video HemoCue B-Hemoglobin Test (photometer training). This training video is available in all WIC agencies or from DeCentech, Inc.

HemoCue Calibration

HemoCue Hb 201
Check the machine each clinic day before use. Follow these steps.

Step	Action	Screen will Display
1	Turn on the machine (left button).	----------
2	Pull the black cuvette holder out to the insertion position (a distinct stop).	Will flash 888, then 101, then Hb with an hourglass figure at the bottom left of the screen
3	If calibration verification takes place, record OK on the log. The machine is now ready to use.	3 flashing dashes with cuvette icon at the top left corner
4	If the calibration does not take place, record the error code on the log.	Error code

Notes:
• When error codes appear, clean the inner chamber with cotton-tipped swab or HemoCue cleaner, then repeat the calibration procedure.
Contact HemoCue, Inc. at 1-800-426-7256 to recalibrate the machine.

HemoCue Hb 201 Hemoglobin Quality Control Log

Copy this page
Make a photocopy of this page each month for each machine your agency uses.

Serial number and cuvette batch number
Record the serial number of your HemoCue Photometer: _____

Record the batch # of cuvettes: _____

Month/year: _____ / _____

Date	Calibration Verification Ok/Error Code	Cleaned? Y/N	Initials	Date	Calibration Verification Ok/Error Code	Cleaned? Y/N	Initials
1				17			
2				18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			
16							

HemoCue Supplies and Cleaning

Introduction
This section provides recommendations for storing and ordering cuvettes.

Storing cuvettes
Heat and humidity will damage cuvettes. Follow these precautions:
• Store cuvette vials at room temperature, away from any direct heat source.
• Cap vials tightly between uses.
• Label vials with date opened.

The shelf life of cuvette vials is:
• Unopened: 2 years from manufacture
• Opened: 90 days.

Cuvette orders
Order cuvettes directly from the company by calling Customer Service at 1-800-323-1674. Do not request an order form because it does not list the special pricing offered to WIC. Orders may be placed at any time.

Information needed to place an order
Be prepared to provide the following information:
• Account number,
• Number of boxes you want to order,
• The item number and description of the item,
For HemoCue Hb 201, order 111710 Hb201 Cuvette (200/box).
• Who to contact and contact information (if the company has questions), and
• Your WIC shipping address (for verification purposes).

Best practices for ordering
The following practices are strongly encouraged:
• Ask for a confirmation number so you can track the order.
• Designate one person to place orders with one or two back-ups.

Note: HemoCue will only accept returned shipments if they shipped the product in error. Therefore, if two people order cuvettes for the same WIC office for the same time frame, the WIC agency cannot return any of the shipped cuvettes.

System cleaning
Refer to the manufacturer's directions for system cleaning procedures. Cleaning supplies can also be ordered from HemoCue.

Measuring Hemoglobin with Pronto

What is non-invasive pulse co-oximeter

The pulse co-oximeter is a noninvasive method for measuring levels of total hemoglobin in blood (SpHb). The sensor collects data from the participant and sends it to the instrument which displays the calculated data as grams/deciliter (g/dL).

Procedure

Follow these steps to measure hemoglobin using the Pronto Non-invasive Pulse Co-Oximeter.

Step	Action	Notes
1	Ensure that the participant is seated comfortably in a chair with their arm resting on a table.	If testing a child, have the parent/guardian hold the child on their lap and gently hold the child's hand and sensor to keep it still.
2	Select a pediatric or adult sensor for the participant.	To use the pediatric sensor the participant must weigh at least 22 pounds.
3	Connect the reusable sensor to the sensor port.	
4	Turn on the instrument	
5	When the screen displays it is ready for testing to begin.	
6	Place the sensor on the participant finger.	The participant's finger that is used must be large enough to cover all lights within the sensor to accurately work. For a child place the sensor on their thumb
7	Begin the test and wait for the timer to countdown until complete.	Test time is approximately 40 seconds.
8	When the test is successful there will be an audible tone and the screen will display results.	
9	If results displayed are inconsistent with participant observed clinical status, repeat the test or test with HemoCue.	
10	Record results in the data system and explain the results.	
11	Wipe down the sensor site with a 70% isopropyl alcohol pad.	Carefully put away machine and reusable sensor for later use.

Measuring Hemoglobin with Pronto, Continued

How to ensure success

A successful test is dependent upon several factors including:

• Place the sensor on a site (finger for adult, thumb for child) that has sufficient perfusion with proper alignment of the sensor lights;
• Place the sensor on a site that has unrestricted blood flow; and
• Do not secure the sensor with tape.

Inaccurate measurements

Causes of inaccurate measurements include:

• Intravascular dyes such as indocyanine green or methylene blue,
• Externally applied coloring (i.e. nail polish),
• Elevated levels of Bilirubin,
• Low arterial perfusion,
• Motion artifact,
• Low arterial oxygen saturation levels,
• Hemoglobin synthesis disorder,
• Hemoglobinopathy,
• Peripheral vascular disease, or
• EMI radiation interference.

Excessive motion

The hemoglobin measurement accuracy may not be reliable if there is excessive motion by the participant. The excessive motion changes the physiological parameters such as blood volume and arterial-venous coupling that occurs during motion.

It is important that the participant sits quietly during the reading. The participant (especially children) should also be instructed to hold their finger or thumb as still as possible during the reading.

Excessive light

Excessive ambient light such as sunlight may cause inaccurate readings. Do not have the sensor placed in an area receiving direct sunlight during testing.

Pronto Cleaning, Quality Control, and Supplies

Introduction
This section provides recommendations for cleaning the sensor and instrument, quality control requirements and process to order supplies.

Cleaning sensor
Refer to the manufacturer's directions for the full system cleaning procedures.

Basic cleaning instructions include:
• Remove the sensor from the participant;
• Disconnect the sensor from the instrument;
• Clean the sensor by wiping with a 70% isopropyl alcohol pad;
• To prevent damage do not soak or immerse sensor in any liquid solution;
• Do not sterilize;
• Allow sensor to air dry thoroughly before using again.

Cleaning instrument
Refer to the manufacturer's directions for full system cleaning procedures.
Basic cleaning instructions include:
• The instrument outer surface can be cleaned with a soft cloth dampened with a mild detergent and warm water solution.
• Do not allow liquids to enter the interior of the instrument.
• The outer surface of the instrument may also be wiped down using the following solvents:
    • Cidex Plus (3.4% Glutaraldehyde),
    • 0.25% Ammonium Chloride,
    • 10% Bleach, and
    • 70% isopropyl alcohol.
• Do not sterilize.
• Do not immerse in liquid.
• Use any cleaning solutions sparingly.
• Do not use petroleum-based or acetone solutions or other harsh solvents to clean.

Quality control
Quality control and calibration tests are not required by agency staff as the machines is programed to complete these tests.

Pronto Cleaning, Quality Control, and Supplies, Continued

Storing sensors
Do not expose the sensors to moisture, humid environments or liquids at any time. There is no shelf life for the sensors as long as they are properly stored.

Sensor and instrument orders
Order sensors and instruments directly from Masimo customer support at 1-800-326-4890. Always notify the company that you are calling from a WIC agency to ensure proper pricing. Orders may be placed at any time.

Information needed to place an order
Be prepared to provide the following information:
• Account number,
• Number of tests you will need to perform,
• The size of the sensor,
• Who to contact and contact information (if the company has questions), and
• Your WIC shipping address (for verification purposes).

Best practices for ordering
The following practices are strongly encouraged:
• Ask for a confirmation number so you can track the order.
• Designate one person to place orders with one or two back-ups.